

REMARKS

*Allowable Subject Matter*

**In the previous Office Action of 6/23/06, the Examiner applying Pottinger et al. (US 4,918,708, hereinafter “Pottinger”) stated:**

“Claims 4-13, and 18-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.”

Applicants previously amended claims 4-13 and 18-20 to be allowable, but the Examiner has withdrawn the allowability of the claims based on Pottinger.

It is respectfully submitted that this approach deviates from USPTO practice and does not lend itself to expedited examination.

Applicants respectfully traverse the current rejections.

**The Examiner stated that claims 8-13 would be allowable if rewritten to overcome the rejections under 35 U.S.C. §101 set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.**

It is respectfully submitted that the Amendment of 11/21/05 placed the Application in condition for allowance.

**The Examiner stated further that claims 18-20 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. §101 set forth in this Office action.**

It is respectfully submitted that the Amendment of 11/21/05 placed the Application in condition for allowance.

*Claim Rejections - 35 USC §101*

The Examiner stated that claims 4 and 18 are rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter.

With regard to claims 4 and 18, the method claims:

- “a) storing...;
- b) analyzing...;
- c) displaying...” [deletions for clarity]

The Examiner states:

“With regard to claim 4, the method claimed by applicant is deemed non-statutory in that there is not practical application produced as a result of the processing.”

“With regard to claim 18, the method claimed by applicant is deemed non-statutory in that there is not practical application produced by the claim. While it is found that applicant's claim supports the acquisition of signal parameters, it is not found that acquisition of signal parameters (which is identified as known by applicant) produces a tangible or useful result since the acquired parameters are not used for any claimed purpose.”

It is respectfully submitted that the Applicants' invention is on all fours with *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, 958 F.2d 1053, 22 USPQ 2d 1033 (Fed. Cir. 1992) in which the claim related to a method for analyzing electrocardiograph signals. The Court stated:

“[the] claimed steps of ‘converting’, ‘applying’, ‘determining’, and ‘comparing’ are physical process steps that transform one physical, electrical signal into another... [T]he method is properly viewed as a method of analyzing electrocardiograph signals in order to determine a specified heart activity.” [insertions and deletions for clarity]

Similarly, the Applicants' invention with the claimed steps of “storing”, “analyzing”, and “displaying” are the physical process steps that produce the tangible and useful result of a display of quantified impairments of a received communication signal. The communication signal is for a quadrature amplitude modulation (QAM) data communication system, which is a practical application for which there are over 5,500 US patents excluding those cited by the Examiner.

Therefore, it is respectfully submitted that claims 4 and 18 are statutory subject matter under 35 USC §101.

***Claim Rejections - 35 USC §103***

**The Examiner stated that in order to expedite a complete examination of the instant application the claims rejected under 35 U.S.C. §101 (nonstatutory) above are further rejected as set forth below in anticipation of Applicant amending these claims to place them within the four statutory categories of invention.**

As previously explained, it is respectfully submitted that this rejection does not expedite a complete examination since these claims were previously allowable and the application was placed in condition for allowance.

**Claims 2 and 4-7 are rejected under 35 U.S.C. §103(a) as being unpatentable over Pottinger et al. (U.S. Patent No. 4,918,708, hereinafter "Pottinger").**

With regard to claim 2, this claim depends from claim 4.

With regard to claim 4, Applicants respectfully traverse the rejections since the Applicants' claimed combination includes the limitation not taught or suggested in Pottinger of:

"storing a statistically significant number of a plurality of received points of said signal for each of said ideal values corresponding to a plurality of groups of said plurality of ideal values,"

The Examiner states:

"With regard to Claim 4, Pottinger discloses a method for detecting and quantifying impairments of a QAM data communications system which: (a) stores a statistically significant number of a plurality of received points (see column 5, lines 9 – 50 where this is interpreted as equivalent)

However, Pottinger does not teach or suggest ideal values or groups of ideal values in Potter column 5, lines 9-50:

"When the device is instructed to carry out a measurement operation it initially digitises and processes a large number of samples...  
...Signal levels are measured in units scaled to the constellation display area.  
...

The digitised samples are processed and stored as groups of statistics in the microprocessor assembly for subsequent further processing." [deletions for clarity]

Since the above claim limitation is not taught or suggested, claim 4 is allowable under 35 U.S.C. §103(a) as being patentable over Pottinger because:

“[T]he prior art reference (or references when combined) must teach or suggest **all** the claim limitations.” [bold for emphasis] *In re Vaeck*, 947 F2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)

Further with regard to claim 4, Applicants respectfully traverse the rejections since the Applicants’ claimed combination includes the limitations not taught or suggested in Pottinger of:

“wherein said plurality of ideal values being distributed around an origin of said coordinate system in a plurality of adjacent rows and columns forming a square shape pattern, said rows and columns being in a direction of said in-phase axis and said quadrature axis respectively,

said pattern defining four outer corner ideal values, external horizontal and vertical ideal values of said two outermost of said rows and two outermost of said columns respectively, internal ideal values in a center proximity of said origin, different combinations of said received points corresponding to respective of said defined ideal values forming said plurality of groups,

each of said received points being defined by an in-phase and a quadrature components in a coordinate system in which a first axis is an in-phase axis and a second axis is a quadrature axis, said components having corresponding ideal components from their respective of said ideal values,

each of said groups corresponding to a respective of said impairments and being specific to the same wherein said impairments are selected from a group including signal compression ratio, I/Q gain imbalance ratio, I/Q phase imbalance, phase noise, signal to noise ratio, signal to interference ratio and clipping level;”

The Examiner states:

“[With regard to Claim 4, Pottinger discloses a method] where impairments are selected from a group of compression ratio, I/Q gain imbalance ratio, I/Q phase imbalance, phase noise, signal to noise ratio, signal to interference ratio (see column 4, lines 48 – 58 where this is interpreted as inclusive of group identified)” [insertion for clarity]

However, Pottinger does not teach or suggest the claimed distribution of ideal values, the pattern of ideal values, the definition of received points, or the groups of ideal values corresponding to the impairments in Potter column 5, lines 9-50, *supra*.

Since the above claim limitations are not taught or suggested, claim 4 is allowable under 35 U.S.C. §103(a) as being patentable over Pottinger because of the holding in *In re Vaeck, supra*.

Further with regard to claim 4, Applicants respectfully traverse the rejections since the Applicants' claimed combination includes the limitation not taught or suggested in Pottinger of:

“analyzing said components of said received points of respective of said groups in relation with their respective of said ideal components of said ideal values to quantify said impairments of said signal and provide calculated values of the same;”

The Examiner states:

“[With regard to Claim 4, Pottinger discloses a method...which] (b) analyzes components of received points of respective of groups with their respective ideal components of ideal values to quantify impairments of signal and provide calculated values (see column 5, line 51 – column 6, line 25);”  
[insertion for clarity]

However, Pottinger does not teach or suggest the claimed analyzing the relationship between received and ideal values in Potter column 5, line 51 - column 6, line 25:

“As the samples are digitised the processing assembly carries out a first processing stage which will be understood by referring to FIG. 5. FIG. 5 illustrates a cluster comprising a plurality of dots, each dot representing a sample in the cluster. ...

These statistics are accumulated in registers, there being a separate set of registers for each cluster in the constellation. These values represent the basic statistics data upon which the device operates to provide measurements of various constellation parameters. ... As has been explained previously many digital radio impairments can be diagnosed by their effect on the constellation display. The present device allows these impairments to be analysed quantitatively and the following is an explanation of three of the quantitative measurements which can be made on constellation impairments. ” [deletions for clarity]

Since the above claim limitation is not taught or suggested, claim 4 is allowable under 35 U.S.C. §103(a) as being patentable over Pottinger because of the holding in *In re Vaeck, supra*.

Further with regard to claim 4, Applicants respectfully traverse the rejections since the Applicants' claimed combination includes the limitation not taught or suggested in Pottinger of:

“c) displaying said calculated values of said impairments [resulting from the relationship of received points and ideal values].” [insertion for clarity]

The Examiner states:

“[With regard to Claim 4, Pottinger discloses a method...which] (c) and displays said calculated values of said impairments (see Figure 4A, 4B, 4C, 5, and 6)” [insertion for clarity]

However, Pottinger does not teach or suggest displaying the claimed calculated values in Potter Figures 4A, 4B, 4C, 5, and 6). Pottinger makes direct measurements based on the effect of the impairments on the signal and diagnoses them on the display as explained in Pottinger column 6, lines 18-24:

“As has been explained previously many digital radio impairments can be diagnosed by their effect on the constellation display. The present device allows these impairments to be analysed quantitatively and the following is an explanation of three of the quantitative measurements which can be made on constellation impairments.” [underlining for clarity]

Since the above claim limitation is not taught or suggested, claim 4 is allowable under 35 U.S.C. §103(a) as being patentable over Pottinger because of the holding in *In re Vaeck*, *supra*.

Further with regard to claim 4, the Examiner states:

“Pottinger does not disclose an identical technique for calculating coordinates of QAM constellation, however Pottinger is clear that his coordinate system has the same basis as applicant's (see figures 4, 5, and 6, column 6, line 61 – column 7, line 34, column 9, lines 42 – 47)).”

However, since Applicants do not claim calculating coordinates of a QAM constellation, this is a *non-sequitur*.

Thus, claim 4 is allowable under 35 U.S.C. §103(a) as being patentable over Pottinger because this does not present a *prima facie* case for obviousness.

Further with regard to claim 4, the Examiner states:

“While applicant's disclosure identifies a more complex technique, the lack of a clear statement regarding improvement rendered by applicant's invention...”

It is respectfully submitted that the technique is not merely more complex but different in kind and more accurate. It is also respectfully submitted that the Examiner has introduced a new requirement that does not exist in 35 U.S.C. §103(a) of “a clear statement regarding improvement rendered by applicant's (*sic*) invention.” Applicants would appreciate the Examiner pointing out where this requirement is in 35 U.S.C. §103(a).

Since the above requirement does not appear in 35 U.S.C. §103(a), claim 4 is allowable under 35 U.S.C. §103(a) as being patentable over Pottinger.

Further with regard to claim 4, the Examiner states:

“, it would have been obvious to one of ordinary skill in the art that the determination of ideal values could be made from a variety of reference points.”

Applicants respectfully disagree since ideal values are not made “from a variety of reference points, the above cannot be correct. It is believed that the Examiner is relying on personal knowledge for this conclusion.

Also, since there is no disclosure, teaching, or suggestion in Pottinger of the claimed limitation regarding ideal values, this conclusion must be based on the Examiner's personal knowledge. Applicants respectfully request an Examiner Affidavit disclosing the Examiner's personal knowledge regarding this limitation pursuant to 37 CFR §1.104(d)(2) (2002):

“When a rejection in an application is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons.”

Further with regard to claim 4, Applicants respectfully traverse the rejections since the Applicants' claimed combination includes the limitation not taught or suggested in Pottinger of:

“ideal values”

The Examiner seems to suggest the obviousness of a combination of Pottinger and the Examiner's personal knowledge to arrive at the claimed invention:

“While applicant's disclosure identifies a more complex technique,...it would have been obvious to one of ordinary skill in the art that the determination of ideal values could be made from a variety of reference points.” [deletion for clarity]

It is respectfully submitted that Pottinger relies on calculations based on direct comparison of a constellation on a graticule as indicated in Pottinger column, line

“According to the present invention there is provided apparatus for analysing digital radio transmissions comprising means for sampling received radio signals to produce for each sampling instant a signal or signals representative of the modulation state of the transmission at the sampling instant, and processing means which can receive and measure a given number of said signals, said processing means being operable to process said signals in accordance with one or more stored routines to generate one or more parameters which are indicative of the condition of the transmission, characterised in that said samples are represented by digitally encoded numbers and said processing means is arranged to allocate said numbers to one of a plurality of groups, the number of groups corresponding to the number of modulation states of the transmission.

Taken as a whole, the adding of extraneous ideal signals with those being measured would interfere with the processing of the sampled signals and render Pottinger seemingly inoperative.

It is respectfully submitted that, claim 4 is allowable under 35 U.S.C. §103(a) as being patentable over Pottinger and the Examiner's personal knowledge because:

If references taken in combination would produce a “seemingly inoperative device”, we have held that such references teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness.” *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984)



With regard to claims 5-7, these dependent claims respectively depend from independent claim 4 and are believed to be allowable since they contain all the limitations set forth in the independent claim from which they depend and claim additional unobvious combinations.

Without being facetious, the proposed combination is analogous to saying a record player renders a CD player obvious because the CD player is more complex and the Examiner has personal knowledge of a laser.

### *Drawings*

**The Examiner stated that the drawings are objected to under 37 CFR §1.83(a) because they fail to show operation of methods as described in the specification.**

It is respectfully submitted that the claims are directed to a method and MPEP 601.01(f) states in relevant part:

“It has been USPTO practice to treat an application that contains at least one process or method claim as an application for which a drawing is not necessary for an understanding of the invention under 35 U.S.C. 113 (first sentence). ...” [underlining for clarity]

Thus, the Examiner is departing from USPTO practice in issuing this objection.

Further, it is respectfully submitted that the filing of some drawings is strong evidence that the invention was filed by the inventors with all the drawings necessary for one of ordinary skill in the art to understand the invention.

However, to move the application to allowance, Figure 9 has been added which is a flow chart 900 of a method for detecting and quantifying impairments of a received communication signal of a quadrature amplitude modulation data communication system represented by a plurality of ideal values in accordance with the present invention.

The subject matter in Figure 9 is on page 4, lines 8-24, and has been replicated by amendment on page 29 after the paragraph beginning on page 29, line 10. No new matter has been added.

### ***Response to Arguments***

The Examiner stated that Applicants' arguments regarding drawings filed December 3, 2005 have been fully considered but they are not persuasive.

“With regard to applicant's argument regarding drawings. Given the complexity of applicant's claimed processing techniques for the calculation of received signal describing use of corner points and center point, examiner feels that an illustration of the process is required in order to properly understand operation of invention, and to further assist in differentiating applicant's claimed invention with admitted prior art.”

It is respectfully submitted that the invention as claimed in claim 4 is a three step method, which can be easily understood by one having ordinary skill in the art. However, to move the case to allowance, a new figure has been added without adding any new matter.

The Examiner stated further regarding the previous objection to drawings:

“While MPEP 601.01(f) does state that applications for processes can be filed without drawings, Examiner first notes that this is not applicable in view of the fact that the applicant did file some drawings with application. Second, MPEP 601.01(f) also states that:

"Applications filed without drawings are initially inspected to determine whether a drawing is referred to in the specification, and if not, whether a drawing is necessary for the understanding of the invention. 35 U.S.C. 113 (first sentence)."

In view of the statistical analysis, processing and displaying steps claimed by applicant examiner holds that drawings are needed for the understanding of the processing claims, as flow charts are a typical part of any software design documentation package and are instrumental for the illustration of the operating process.

Objection to drawings is maintained.”

While the above is a *non-sequitur*, a new drawing has been added without adding new matter.

The Examiner stated that Applicants' arguments with respect to claims 2, 4-13, and 18-20 have been considered but are moot in view of the new grounds of rejection.

The Examiner's Arguments have been addressed above.

### *Other*

The Examiner stated that the prior art previously made of record and not relied upon is considered pertinent to Applicant's disclosure.

"This is added to clarify why references were cited.

Tsui et al (US-6,385,237, 1st office action) discloses techniques for QAM analysis that describe many aspects of applicant's claimed invention."

"Bernard (US-5,394,185, 2nd office action) discloses hum measurement techniques for CATV systems in a spectrum analyzer with many characteristics similar to applicant's description of operation."

"Tajiri et al (US-5,946,359, 2nd office action) discloses an apparatus for QAM analysis that describe many aspects of applicant's claimed invention."

"Williams (US-6,151,559, 2nd office action) discloses a system and apparatus for QAM analysis that describe many aspects of applicant's claimed invention."

"Al-Araji et al (US-6,556,239, 2nd office action) discloses an apparatus for distortion analysis of CATV networks that describe many aspects of applicant's claimed invention."

"Kuntz et al (US-6,671,334, 2nd office action) discloses an apparatus for QAM analysis that describe many aspects of applicant's claimed invention."

"NPL references are provided to show details of known techniques and products at the time of invention."

The above references cited by the Examiner showing the prior art have been considered and are not believed to disclose, teach, or suggest, either singularly or in combination, Applicants' invention as claimed.

*Conclusion*

In view of the above, it is submitted that the claims are in condition for allowance and reconsideration of the rejections is respectfully requested. Allowance of claims 2, 4-13, and 18-20 at an early date is solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including any extension of time fees, to Deposit Account No. 50-0374 and please credit any excess fees to such deposit account.

Respectfully submitted,



Mikio Ishimaru  
Registration No. 27,449

The Law Offices of Mikio Ishimaru  
333 W. El Camino Real, Suite #330  
Sunnyvale, CA 94087  
Telephone: (408) 738-0592  
Fax: (408) 738-0881  
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